



# A Prospectus to Study the Effect of High School Academic Performance Index on University Eligibility

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The California Postsecondary Education Commission periodically conducts studies of university eligibility of public high school graduates. The eligibility rates from these studies are the proportion of high school graduates who qualify for freshman admission to California public universities. Eligibility is based on completion of specific high school courses, standardized test scores, and grade-point average. Eligibility rates are higher than the percent of students who actually enter the university systems from public high schools because some students will choose to attend community colleges, private colleges, out-of-state institutions, or enter the workforce directly.

The data used for the Commission's eligibility studies can be used to answer a number of specific questions regarding student eligibility. Locating the causal factors of variation in eligibility rates can assist policy makers to implement policies to improve access and equity in higher education.

## **The research question**

The Academic Performance Index (API) is a measure of the performance of public high schools in California and is based on a variety of standardized tests. A school's API is determined using a formula that assigns weights to student aggregated performance.

A comparison of income data with school performance data indicates that schools in low socio-economic areas tend to have low API scores. Enrollment data also shows that Latino and African American students are more likely to attend low-API schools than White or Asian students. So what happens to eligibility rates as a school's API increases? When comparing populations at "low performing" schools with populations at "medium" and "high" performing schools, do eligibility rates increase at a steady and predictable rate? In other words, does a rising tide raise all boats?

It is also important to understand the degree to which API is a predictor of student eligibility to the public university systems. Are students who attend lower API schools at a significant disadvantage in obtaining university eligibility? There is likely a correlation between median household income and API scores; this study will attempt to discover the effect of school API on student eligibility, while controlling for levels of income.

## **Variables included in data set**

The data used for this prospectus was originally collected for the Commission's 2001 eligibility study. Student transcripts from that study provide information on student ethnicity and gender. To enhance the data for the purpose of this prospectus, staff included school API, median income by school zip code, and the student's eligibility status for UC or CSU.

**Data available for analysis**

Variable	Description and categories
Median Family Income	<p>This variable assigns a median family income for each school participating in the study based on census information by zip code of the school site. Therefore, all transcripts coming from the same school are assigned identical income figures. The reliability of this method may decrease in examining schools located in urban areas where both wealthy and low-income families reside.</p> <p>Income is divided into four categories: low (0–\$35,000), low-middle (\$35,001–\$50,000), middle (\$50,001–\$70,000), and middle-high (\$70,001+).</p>
Academic Performance Index (API)	<p>A school's API is determined by the Department of Education, which annually calculates a score for every public school in the state. API is determined using a formula that assigns weights to student aggregated performance on a variety of standardized tests. The scores range from 400 to 1000 with a target score of 800.</p> <p>For this study, API is divided into the lowest quartile, the middle 50%, and the highest quartile. There is significant debate regarding the reliability of API in measuring school quality, however it is the state's only form of standardized measurement to determine school success. Therefore, the bottom quartile is labeled "Low Performing", the middle 50% is labeled "Average Performing", and the top quartile is labeled "High Performing" as variables for this study.</p>

**Statistical analysis**

Two types of statistical analyses will be used in conducting this study. Cross-tabulation analysis will be used for testing the relationship between two variables. Using this analysis, it is possible to draw comparisons and form hypotheses regarding the interaction between dependent and independent variables. Eligibility for UC and CSU will be cross-tabulated with the independent variables API, median household income, and school size. This allows comparison of eligibility rates across all API and income levels.

Logistic regression analysis will be used for making predictions about the relationship between variables when the dependent variable has only two possible outcomes. In this case, a student is either eligible or not eligible.

The logistic regression analysis determines the influence that any independent variable has on the dependent variable. It also facilitates finding answers to very specific questions, for example, "If a student from a \$60,000 income household attends a school with an API score of 700, what is that student's probability of eligibility for the University of California?"

## Preliminary findings

Staff conducted a preliminary cross-tabulation and analysis of the data using two separate logistic regression models: one with UC eligibility as the dependent variable and the other for CSU eligibility. The independent variables for both models are the same: school API, median household income, school size, and gender.

Some of the highlights of the results are as follows:

- For every 50-point increase in high school API, a student's chances of being eligible for UC increase by 34% and for CSU by 21%.
- For every \$10,000 increase in household income, a student's odds of eligibility for UC increase by 6%. Income does not have a significant effect on CSU eligibility.
- School size is not a predictable variable for student eligibility to UC or CSU.
- Male students are 29% less likely than female students to be eligible for UC and 42% less likely than female students to be eligible for CSU.

More details of the results are in the tables on page 4. The results of the logistic regression confirm what may be intuitive: that school API does play a significant role in the probability that a student will be UC and CSU eligible. While this may seem to be an obvious conclusion, staff has learned from an initial analysis *the degree* to which API affects eligibility when factors of income, school size, and gender are held constant.

## Next steps

Staff intends to complete a study that will examine more closely the relationship among student groups, API scores, and university eligibility. In doing so, staff will analyze whether:

- Eligibility rates increase at the same rate for all racial/ethnic groups;
- High schools that have demonstrated substantial improvement in API rates over the course of several years show increasing eligibility rates;
- Disparities in eligibility rates exist among different regions across the state and between urban, suburban, and rural environments; and
- Other factors contribute to the eligibility gap between males and females.

Staff will complete its analysis and report for consideration by the Commission at the March 2006, meeting.

**Preliminary cross-tabulation of data**

Category	Eligibility rate	
	UC	CSU
<b>API</b>		
Low performing (bottom 25%)	8%	27%
Medium performing (middle 50%)	13%	35%
High performing (top 25%)	26%	46%
<b>Income</b>		
Low (0–\$35,000)	9%	29%
Low-middle (\$35,001–\$50,000)	12%	32%
Middle (\$50,001–\$70,000)	17%	38%
Middle-high (\$70,001+)	25%	45%
<b>School size</b>		
Small school (0–250 grad class)	12%	35%
Average-small school (251–450)	15%	36%
Average-large school (451–640)	16%	35%
Large school (641–1,000)	19%	40%

**Odds ratios from preliminary logistic regression**

Effect	Change in probability of being eligible	
	For UC	For CSU
API by 50 point increase	+34%	+21%
Income by \$10K increase	+6%	not significant
School size	not significant	not significant
Student is male	-29%	-42%
Student is female*	0%	0%

\*Female is the reference level for gender.